Dataset: CTD data from MOCNESS tows taken in the Antarctic in 2011 from ARSV Laurence M. Gould LMG1110 in the Southern Ocean from November to December 2011 (Salp_Antarctic project)

Project(s): Population ecology of Salpa thompsoni based on molecular indicators (Salp_Antarctic)

Abstract: CTD data from MOCNESS-1m tows in the Southern Ocean around the South Shetland Islands and Palmer Archipelago, Western Antarctic Peninsula in November 2011. For a complete list of measurements, refer to the supplemental document 'Field_names.pdf', and a full dataset description is included in the supplemental file 'Dataset_description.pdf'. The most current version of this dataset is available at: http://www.bco-dmo.org/dataset/488871

Description: CTD data from MOCNESS tows taken in the Antarctic in 2011

CTD data collected during the 1 meter2 MOCNESS tows to the Cape Shirreff area in the Antarctic . These data are part of the standard suite of measurements collected during the net tows to provide environmental background for the animals collected.

Fluorescence was not collected during these tows.

Acquisition Description: From the MOCNESS Operating Instruction Manual: "The nets are opened and closed sequentially by commands through a single conductor armored cable from the surface. The electronics has 16-bits of resolution and the basic data stream consists of temperature, depth, conductivity, frame angle, flow counts, net number and net response. An acquisition/controller computer retrieves data from the underwater unit at a rate of up to 4 times a second. Temperature (to approximately 0.01 deg C) and conductivity are measured with SEABIRD sensors. A modified T.S.K. flowmeter is normally used to measure flow past the net. Both the temperature and salinity sensors and the flowmeter are attached to brackets which are mounted on the top portion of the frame so that they face directly into the flow when the frame is at a towing angle of 45 deg. An electronic pendulum angle transducer measures the angle of the towed net through the water. A GPS unit providing latitude and longitude [is] integrated into the data stream." (p. 7)

Processing Description: To continue from the MOCNESS Manual: " A microcomputer (together with disk drive and printer) are the deck unit and permit shipboard real-time data acquisition and processing as well as net control. Salinity (to approximately 0.01 ppt), net oblique velocity and vertical velocity, and volume filtered by each net is calculated after each string of data has been received by the computer. Raw and processed data are stored on disc (in separate files) and processed data can be printed out. Plots of net depth versus time, temperature and salinity versus depth, temperature versus salinity and latitude versus longitude are made during a tow and displayed

on the computer screen." (p. 7)

Deployment Information

Deployment description for ARSV Laurence M. Gould LMG1110

UNOLS STRS record: http://strs.unols.org/Public/diu_cruise_view.aspx?cruise_id=127242 The primary science objectives of the cruise are to examine genome-wide patterns of gene expression, target gene expression levels, and patterns of population genetic diversity and structure of the Antarctic salp, Salpa thompsoni in relation to biological and physical environmental parameters in the Western Antarctic Peninsula region. High-frequency acoustics data will be used to provide information about the distribution of salps, krill, and other zooplankton. Sampling from shelf and oceanic waters between 0 and 2,000 meters will take place at selected stations using a 1-meter^2 MOCNESS to characterize the planktonic assemblage, and a Reeve net to collect live material for molecular and biochemical analysis. Environmental parameters to be measured include standard hydrographic variables (temperature, salinity, and depth), as well as fluorescence and turbidity. Water samples will be collected using a CTD rosette to determine chlorophyll concentration. An additional science objective is to develop a method of using acoustics to assess the abundance and distribution of salps in the Southern Ocean. Cruise Data Report

Dataset Processing Description: See pages 33-37 in the Cruise Report for a description of the MOCNESS set up and processing activities on LMG1110.

Instrument Information

Instrument	CTD MOCNESS
Description	"The MOCNESS was provided by Raytheon and it was equipped with nine 335-mesh nets. In addition to the standard temperature and conductivity probes it was also equipped with a beta-type strobe unit provided by BESS Co. and a Benthos 200 kHz altimeter. The underwater unit used through the cruise was #156." p.33 of Cruise Report LMG1110.
Generic Instrument Name	CTD MOCNESS
Generic Instrument	The CTD part of the MOCNESS includes 1) a pressure (depth) sensor which is a thermally isolated titanium strain gauge with a standard range of

Description	0-5000 decibars full scale, 2) A Sea Bird temperature sensor whose frequency output is measured and sent to the surface for logging and conversion to temperature by the software in the MOCNESS computer (The system allows better than 1 milli-degree resolution at 10 Hz sampling rate), and 3) A Sea Bird conductivity sensor whose output frequency is measured and sent to the surface for logging and conversion to conductivity by the software in the computer (The system allows better than 1 micro mho/cm at 10 Hz sampling rate). The data rate depends on the speed of the computer and the quality of the cable. With a good cable, the system can operate at 2400 baud, sampling all variables at 2 times per second. One sample every 4 seconds is the default, although the hardware can operate much faster. (From The MOCNESS Manual)